

PALEONTOLOGY

Fossil Deposit Found

Ice Age elephant bones, the tooth of a prehistoric horse and insect, tree, shrub and flower remains have been discovered near San Francisco Bay.

► BONES of an Ice Age elephant, the tooth of a prehistoric horse, insect remains and a wide variety of tree, shrub and wildflower fossils, found near San Francisco Bay, will help scientists picture prehistoric life in that region.

The fossil deposit was discovered when grading machinery, leveling off a hill that protruded into the edge of a former salt marsh, cut through the stump of a tree—and an elephant's tusk. The area was immediately investigated and the rich assortment of specimens is being studied at San Mateo Junior College, Frank M. Stanger states in *Science* (June 1).

Ten elephant tusks, ranging from four to ten feet in length, were found, as well as bones and teeth, but none of the skeletons were complete.

Tusks that appeared to be sound shattered into small bits at the first attempt to move them, and the bones were usually more fragile than the rock in which they were embedded. Portions of the bones were partially mineralized, while other parts, sometimes of the same bone, had completely disappeared. It was only with great care and the use of plaster casts, Mr. Stanger reports, that any of the tusks or bones were preserved.

Twenty-one more or less complete teeth were discovered, five of which were still in place in the jawbones. The jawbones of two animals are nearly complete, and one other pair was complete, but grotesquely distorted and badly decayed.

The tooth of the prehistoric horse was found in gravel at the edge of a stream bed. It was within a few feet of some of the elephant bones, but not in the same sedimentary deposit.

The green scarab-like iridescence of a beetle's wing was the first evidence of prehistoric insects to be discovered. Beetles, ants and grasshoppers have been identified by F. D. Klyver, paleobotanist at San Mateo Junior College. Numerous specimens of what appear to be insect and spider eggs were also found, either close beside the elephant bones or in the surrounding region.

Douglas fir, Monterey pine, Monterey cypress and alder head the list of identified trees. Snowberry and poison oak are

among the shrub species, and a wild blackberry vine was found, as well as several common Western wild flowers, such as red maids and miner's lettuce. Ranging from small seeds and fine particles of wood to stumps and sizable logs, 68 different varieties of plants have been identified thus far.

Geologists who have studied the fossils generally agree that they belong to the middle or late Pleistocene time. The deposit was discovered only 20 feet above sea level in the unincorporated village of Millbrae, south of San Francisco, on the peninsula that separates the bay from the ocean.

While the alluvial fan was being formed by the streams, Prof. Eliot Blackwelder of Stanford University reasons, much of its surface was probably covered with vegetation on which elephants might feed. During rainy seasons this bed of sand-clay was possibly soft enough to cause animals as heavy as elephants to sink in it and not be able to escape.

After they had been entrapped and

died, their carcasses would have been eaten by carnivores and their bones exposed, scattered and trampled, probably for some time, before being covered by the expanding alluvial deposits.

Once covered, the fineness of the mud-flow around them, together with the never-failing supply of ground water at this low level, would have tended to keep them from decaying completely. Slumps or crawling of the soil, or possibly earthquakes, may have subsequently distorted the bones.

Animals of the Ice Age, such as the ground sloth, mastodon and bison, have already been identified near San Francisco by scattered skeletal remains, but mostly through the discovery of isolated fragments of one animal.

Science News Letter, June 16, 1945

AERONAUTICS

Controllable-Wing Plane Makes Handling Easier

► SMALL airplanes may be easier to fly as the result of the development of a new controllable-wing plane now undergoing exhaustive tests at Stout Research Division in Dearborn, Mich. This experimental plane is built so that the position of the wings in relation to the fuselage may be changed at will by the pilot.

Advantage of the controllable wing



CONTROLLABLE WINGS—Greater safety and easier handling of personal aircraft may result from this new development. The controllable wing eliminates the necessity of ailerons, elevators and rudders.

appears to be that it will result in greater safety and easier handling of personal aircraft. The controllable wing eliminates the necessity for ailerons, elevators and rudders.

Several years may be required to develop the wing before it can replace the conventional type, reports I. M. Laddon, vice president in charge of engineering

of Consolidated Vultee Aircraft Corporation, parent company of the Stout laboratories.

The controllable-wing plane was developed by George Spratt, who piled up 100 hours of secret flying with his new plane before friends knew he could fly. He cannot fly a conventional-type airplane.

Science News Letter, June 16, 1945

DENTISTRY

Hard on Teeth

Drinking large quantities of popular cola drink destroys the enamel, studies with rats show. The effect on humans has not yet been determined.

► DRINKING large quantities of a popular cola beverage is hard on the teeth of rats, causing severe destruction of the enamel, Lieut. Comdr. J. S. Restarski, Lieut. R. A. Gortner, Jr., and Lieut. Comdr. C. M. McCay found in studies at the Naval Medical Research Institute in Bethesda, Md. (*Journal, American Dental Association, June.*)

Since men are not mice or rats, the Navy officers are not yet issuing any warning against human consumption of cola drinks. Differences in composition of the saliva, manner of drinking and amounts of beverage consumed must be studied before the results of the rat studies can be applied to humans.

The cola beverage tested is not the only soft drink that can be hard on tooth enamel. Probably any other acid-containing soft drink would cause the same destruction, especially when sweetened. For reasons of economy, the Navy officers made part of their studies with a drink containing the same amounts of sugar and phosphoric acid as the cola beverage contains. The effect on the rat's tooth enamel was the same.

Ginger ale, grapefruit juice and cranberry juice as well as the cola drink had been found, by another scientist, to have an enamel-destroying effect.

Although the acid alone caused some enamel destruction, sugar added to the acid drink aggravated the effect.

In one part of the study the scientists added sodium fluoride to the acid beverage. Sodium fluoride in very minute amounts in drinking water seems to protect teeth from decay when taken during the years of tooth formation. It decreased but did not entirely prevent the destruction of the enamel caused by the acid or cola beverage.

The only clue so far reported to the

effect of these acid-containing drinks on human teeth came from a study with teeth that had had to be pulled from various patients. When these were immersed in a cola beverage for two days, the enamel surface had lost much of the calcium that gives it its hardness.

Science News Letter, June 16, 1945

CHEMISTRY-ENGINEERING

Plastic Replicas Used To Test Smoothness

► THE SMOOTHNESS, or degree of finish, of metal parts can now be rapidly and satisfactorily determined by the use of nearly transparent plastic replicas, following methods developed by the National Bureau of Standards, and acceptable modes of specifying and designating surface finish will probably result. Metal smoothness specifications have been lacking in the past because no easy method of evaluating them had been worked out.

The new method, described by Harry K. Herschman of the Bureau staff in Mechanical Engineering, consists of applying a suitable solvent to the metal surface, then pressing on a strip of clear plastic film. The solvent softens the side of the film adjacent to the surface being examined and permits it to flow and conform under the pressure to the minute surface irregularities. The film dries in about a minute and can then be stripped off readily, giving a perfect facsimile of the surface.

After a replica is made, its degree of transparency depends upon its roughness; increased roughness results in decreased transparency. Also, the rougher the metal surface, the more pronounced are the variations in the regularity of the reproduced pattern. This fact led to the

development of the apparatus for evaluating surface roughness, based upon the degree of variation of the geometric characteristics in a nearly transparent replica. In this apparatus a restricted beam of light passes through an oscillating test replica and to a photoelectric cell. The intensity of the light transmitted through the oscillating replica varies because of the unevenness of the surface of the pattern. Voltage readings of the current from the photoelectric cell may be calibrated in terms of the "peak-to-valley" values of the surface.

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